TO BOSTON.

Sydney	$—
Lingan	—
Cow Bay	—
Port Caledonia	—
Little Glace Bay	—

Towing Rates.

TO EASTERN PORTS.

	Per Ton.
To New Haven,	$ 40
Bridgeport,	40
Southport,	40
Westport,	40
Norwalk,	40
Stamford,	40
	Per Boat.
Greenwich,	$70 00
Port Chester,	80 00
Mamaroneck,	70 00
Glen Cove,	—
New Rochelle,	55 00
East Chester,	60 00
West Chester,	30 00
White Stone,	30 00
College Point,	25 00
West Farms,	25 00
Flushing,	30 00
Harlem and Mott Haven,	20 00
Port Morris,	20 00
Ninety-first street and Astoria,	16 00

Boats beyond Port Chester, with less than 200 tons, $80 per Boat.

TO RIVER PORTS.

Boats of 150—250 Tons.	Per Ton.
To Manhattanville,	8 cents.
Spuyten Duyvil,	8 "
Yonkers,	9 "
Hastings,	10 "
Piermont,	12 "
Dobbs' Ferry,	12 "
Nyack,	14 "
Tarrytown,	15 "
Sing Sing,	16 "
Croton Landing,	17 "
Haverstraw,	17 "
Verplanck's,	17 "
Peekskill,	18 "
West Point,	20 "
Cold Spring,	20 "
Newburgh,	18 "
Poughkeepsie,	22 "
Rondout,	23 "
Boats of 100 Tons	*Per Boat.*
To Manhattanville, and Return,	$11 00
Spuyten Duvvil, "	13 00
Yonkers, "	15 00
Sing Sing, "	20 00
Peekskill, "	25 00

METALS.

NEW YORK, June 10, 1870.

IRON.—Duty: Bars, 1 to 1¼ cents ₱ lb; Railroad, 70 cents ₱ 100 lbs.; Boiler and Plate, 1½ cents ₱ lb; Sheet, Band, Hoop, and Scroll, 1¼ to 1¾ cents ₱ lb; Pig, 9 ₱ ton; Polished Sheet, 3 cents ₱ lb.

	Store Prices.
Pig, Scotch No. 1, ₱ ton	34 00@37 00
Pig, American, No. 1	32 00@34 —
Pig, American, No. 2	30 —@31 —
Pig, American, Forge	29 —@30 —
Bar, Refined, English and American	— —@75 00
Bar, Swedes, assorted sizes (gold)	85 00@100 00
Bar, Swedes, ord'y sizes, less 5 ₱ ct.	110 —@ — —
Bar, Refined " "	77 50@ — —
Bar, Common " "	72 50@ — —
Scroll " "	87 50@115 —
Ovals and half-round " "	95 —@110 —
Band " "	95 —@ — —
Horse Shoe " "	95 —@ — —
Rods, ⅜ to 3-16 inch " "	85 —@120 —
Hoop " "	105 —@145 —
Nail rod, less 5 ₱ ct.	— 7 @—7½
Sheet, Russia, as to Nos. (gold)	— 11 @—11½
Sheet, Single, D. and T Common	— 4½@— 5¾
Sheet, Galv'd, Nos. 14 to 26 12 and 14 c. 25@30 ₱ c. off	
Rails, English (gold), ₱ ton	59 00 @60 00
Rails, American, at Works in Pa.	71 00 @72 00

STEEL.—Duty: Bars and ingots, valued at 7 cents ₱ lb or under, 2½ cents; over 7 cents and not above 11, 3 cents ₱ lb; over 11 cents, 2½ cents ₱ lb, and 10 ₱ cent ad val. (Store prices.)

English Cast (2d and 1st quality) ₱ lb	— 15	@— 18
English Spring (2d and 1st quality)	— 7	@— 10
English Blister (2d and 1st quality)	— 10	@— 17
English Machinery	— 11½	@— 14
English German (2d and 1st quality)	— 13	@— 15
American Blister "Black Diamond"	— —	@— 12
American, Cast, Tool do.	— —	@— 18
American, Spring, do.	— 9	@— 11
American Machinery, do.	— —	@— 12
American German, do.	— 9	@— 12

COPPER.—Duty: Pig, Bar, and Ingot, 5; old Copper 20 cents ₱ lb; Manufactured, 45 per cent. ad val.

	All Cash.
Copper, New Sheathing, ₱ lb	—@— 31
Copper Bolts	—@— 31
Copper Braziers, 16oz. and over	—@— 31
Copper Nails	—@— —
Copper, Old Sheathing, &c., clean	36 @— —
Copper, Chili Pig	16 @— 17
Copper, American Ingot	—@— —
Yellow Metal, New Sheating	18¼@— 19¼
Yellow Metal Bolts	24 @— —
Yellow Metal Nails	24 @— —
	— @— 24

LEAD.—Duty: Pig, $2 ₱ 100 lbs.; old Lead, 1½ cents ₱ lb; Pipe and Sheet, 2¼ cents ₱ lb.

Galena, ₱ 100 lbs	$— — @— —
Spanish (gold)	6 20 @6 25
German, do.	6 20 @6 40
English, do.	6 20 @6 45
Bar (net)	— — @ 7 70
Pipe and Sheet (net)	— — @ 7 70

TIN.—Duty: Pig, Bars, and Blocks, 15 ₱ cent. ad val.; Plate and Sheets and Terne Plates, 25 ₱ cent. ad val.

	Gold ₱ lb.
Banca	43 @43½
Straits	38 @—
English	36 @—

PLATES.

Fair to Good Brands.	*Gold.*	*Currency.*
I. C. Charcoal, ₱ box	$8 37½@8 75	$9 75 @10 50
I. C. Coke	7 — @7 75	8 25 @ 9 25
Coke Terne	6 — @6 25	7 25 @ 7 50
Charcoal Terne	7 50 @8 —	9 — @ 9 —

SPELTER.—Duty: In Pigs, Bars, and Plates, $1 50 ₱ 100 lbs.

	Gold.
Plates, Foreign ₱ 100 lbs.	$6 00 @6 25½
Plates, Domestic ₱ lb.	10 @— 11½

REMARKS.

IRON—There has been very little inquiry for Scotch Pig since our last, but the supply being moderate, prices are sustained; we have only to notice a sale of 125 tons Eglington at $33,50 @ $34. American is in limited request, and prices are irregular, and in some instances lower. New American Rails have been in active request, and we notice sales of 17,000 tons on private terms. English are in moderate demand at $59 @ $60 gold; 1,300 tons old Double-headed and T sold, part at $39 50 gold; and 120 do. old Double-headed, to arrive, $46 currency. Refined English and American Bar from store continues dull at former quotations. There has been an arrival of Swedes Bar, and orders for 1¼ to 5-inch can now be filled—6, 7, and 8 inch, by ¾ and ½ inch, however, are still exceedingly scarce, and would bring our highest gold quotation from importers' hands. The report in our last, of 5000 tons English Rails, weighing 56 lbs., "part at $56 gold," was an error as to the price, the sale having been made about $3 above the figure quoted.

LEAD—Pig continues in but limited demand though in prices there is no quotable change; 50 tons Spanish sold at $6 25, gold, 30 days. Bar, Pipe and Sheet, $7 70 @ 100 lbs.

COPPER—New Sheathing is steady at 31 cents and Yellow Metal 24, cash. Ingot continues in very limited demand, but prices remain steady; the sales embrace 180,000 lbs., at 18¾ @ 18¾ cents for Baltimore, and 19 @ 19¼ for Tennessee and Lake Superior, the market closing quite firm, some holders asking 19¾ cents for Lake.

TIN.—The business in Pig since our last has been of a jobbing character, the stock on the spot being too small to admit of large transactions; prices remain very firm; the sales are 200 to 300 slabs Straits at 38 cents, and 50 do. Banca, 43½c.; English, 36c., all gold. The demand for Plates continues light, but with very moderate stocks, firm prices in Liverpool, and rising markets for Pig, values are well sustained, and rather tend upward; 300 boxes Charcoal Tin sold at $8 75 for I. C., and 425 do. Charcoal Terne, $7 75@$8, gold.

STEEL.—All descriptions are steady at our quotations for lots from store.

SPELTER—Is very quiet but steady. Silesian is held at 6@6½c.; Stolberg, 6½c.; and V. M., 5¾c., all gold.

ZINC.—American Ox. Zinc, 6½@7c.; French do., 9½@10c.; Sheet Zinc, 9@10c.

MANGANESE.—Lump, 4@4½c.

Mining Stocks.

NEW YORK, June 9, 1870.

Mining stocks are steady, and our quotations will not materially vary from last reports. Sales of Central gold were effected this A. M. at 21 a 22, and 1,000 La Crosse was sold at 10. Gregory sold for 1 65. Reference to our quotations in another column will give the condition of the market to date.

Petroleum has advanced almost without exception. Home is rather unsettled, being quoted at from $3 80 to 6 00. Central is from 68 to 65. Without exception, all the stocks evince a decided advance from our last report. Below is the latest from the Stock Board.

	Bid.	*Asked.*
Bennehoff	—	—
Bergen Coal and Oil	40	—
Bliven Oil	45	—
Brevoort	1 00	1 20
Buchanan Farm	43	—
Central	60	65
Home Petroleum	3 50	6 00
N. Y. & Alleghany	2 00	—
Northern Light	—	1 00
Pithole Creek	1 30	1 75
Rathbone	30	—
Rynd Farm	32	38
Second National	—	—
Blood Farm	50	—
United Petroleum Farms	23	—
United States	75	1 00

San Francisco Stock Market.

SAN FRANCISCO, June 7, 1870.

The main feature of our telegraphic report from the San Francisco Stock Board is the tumble in Gould and Curry, it having declined since our last report from 120 to 77½. It declined 19½ yesterday, and seemed to affect all the stocks on the list. Below we give the full report.

	1st Board.	*2d Board.*
Savage	34	—
Crown Point	15½	—
Yellow Jacket	44½	—
Kentucky	37	—
Chollar Potosi	27½	—
Gould & Curry	77½	—
Ophir	16	16
Alpha	—	—
Belcher	9½	—
Imperial	32	—
Hale & Norcross	—	—
Amador	200	—

The Slate Trade.

NEW YORK, June 10, 1870.

The quiet state of the market in this city still continues. Shipments, however, are increasing—those of the present week being considerably larger than those of last week.

The trade in Vermont still continues in a favorable condition, and Slate men are quite hopeful. The shipments of Slate from the Vermont quarries to England, which we noticed in our last, were colored Slates, intended for ornamental work, and it is quite probable that a good foreign trade may spring up in American fancy-colored Slates.

From our Pennsylvania correspondent, we learn that the Pennsylvania Slate Company's quarry at Wind Gap has been seized by the Sheriff. The quarry was known as the "Pen. Argyle," and is one of the largest in the State, its average daily production being 125 squares. The matter will probably be compromised, and the quarry again started.

[Corrected weekly.]

PRICES OF ROOFING SLATE.

(A "square" represents 100 superficial feet.)

Vermont purple, 1st quality, per square	$9 50@10 50
" green, 1st " "	9 50@10 50
" red, 1st " "	15 00@16 00
" variegated, "	8 50@ 9 50
Pa. b'k and d'k blue, 1st qual., "	7 00@ 8 00

SHIPMENTS OF SLATE OVER THE LEHIGH VALLEY, AND LEHIGH AND SUSQUEHANNA R. R., AND THE LEHIGH CANAL:

For the week ending June 4, 1870.

LEHIGH VALLEY R. R.

ROOFING SLATE.

Jones & Williams	175 squares.
Lehigh Slate Co.	140 "
Saylor & Morgan	140 "
Kuntz & Woodring	105 "
Girard Slate Co.	105 "
D. Thomas	105 "
Blue Mountain Slate Co.	70 "
Locke Slate Co.	70 "
American "	70 "
D. Williams & Co.	35 "
Total	1,015 "

MANTELS.

Lehigh Slate Co.	16 cases.

SCHOOL SLATES.

D. Williams	96 cases.
Lehigh Slate Co.	21 "
A. W. Lerch	6 "
Locke Slate Co.	3 "

LEHIGH AND SUSQUEHANNA R. R.

ROOFING SLATE.

Eagle Slate Co.	105 squares.
Thos. W. Parry	70 "
N. Y. & Pa. Slate Co.	30 "
Lehigh River Slate Co.	36 "
H. Williams	20 "
Mauch Chunk Slate Co.	17 "
Total	272 "

LEHIGH CANAL.

ROOFING SLATE.

Heinbach Slate Co.	340 squares.

	Week.	Previously.	Total for Year.
L. and S. R. R.	272	1,617	1,889
L. V. R. R.	1,015	4,560	5,575
Lehigh Canal	340	422	762
Total	1,627	6,599	8,226

American Institute of Architects.

SECRETARY'S OFFICE,
98 BROADWAY, NEW YORK.

At a Special Adjourned Meeting of the Board of Trustees, held May 23d, 1870: Upon the opening of sealed ballots cast by Fellows of the Institute, it was found that the following candidates were duly elected as *Fellows*:

LEVI T. SCHOFIELD, Cleveland, Ohio.
JOSEPH IRELAND,
C. C. MILLER, Toledo, Ohio.
J. A. VRYDAGH, Terre Haute, Ind.

The Board adjourned to May 30th.

At a special adjourned meeting, held May 30th, the following business was transacted:

N. B. KELLY, of Columbus, Ohio, was duly elected an *Associate*.

The following preamble and resolutions, prepared by the Secretary, were read and adopted:

Whereas, the Board of Trustees has heard of the recent demand of the British Government upon E. M. BARRY, Esq., late Architect in charge of the New Houses of Parliament, London, for the original plans and papers used in the construction of that building by the late Sir CHARLES BARRY and himself, therefore

Resolved, that the Secretary for Foreign Correspondence be authorized and directed to convey to Mr. BARRY the following expression of opinion on the part of this Board, and to furnish copies of the same to all the Societies with which this Institute is in correspondence.

The Board of Trustees of the American Institute of Architects, convened in New York, this 30th day of May, 1870, deem it their duty, not only to E. M. BARRY, Esq., but to the Architectural Profession, both here and abroad, to express their approval of the course taken by Mr. BARRY in resisting the demands of the British Government for the drawings and papers relating to the construction of the New Houses of Parliament, which had been made by the late Sir CHARLES BARRY and himself. The Board of Trustees also take occasion to assure Mr. BARRY that the right of ownership of plans and papers, by an architect who has been employed to carry out a work, has been maintained by the leading architects of America during the past twenty-five years, and has been officially recognized by the American Institute of Architects since 1864. The Board of Trustees deem it to be of the utmost importance, not only to the Architectural profession, but to those who avail themselves of the services of architects, that the principal of ownership in plans be everywhere maintained and enforced.

Narrow-gauge Railway.

WE gladly insert, at a late moment for the present issue, the following brief extract from a letter giving some account of the successful working of a narrow-gauge railway at the Thomas Iron-works, at Hokendauqua, Pa. The line was built to take away the cinders from the blast-furnaces: "The road is 2 feet 6 inches in gauge, and is the same as when we used horse-power. The engines were built by Messrs. M. BAUD & Co., at the Baldwin Locomotive Works, in Philadelphia. The steam-cylinders are 9 inches diameter and 12 inches stroke; driving-wheels 30 inches diameter, with steel tiers 2 inches thick. In order to economize in room, we ascend very rapidly to the tip, or dump, and a portion of the road has a gradient of 4 feet in 100 feet, or 211 feet per mile. Our cinder cars are four-wheeled, weighing, when loaded, 3 tons 5 cwt. gross; wheels only 16 inches diameter. The engines weigh, when ready for work, with tank full of water, 8 tons 4 cwt. gross. One of them will haul, with ease, up this gradient of 211 feet per mile, 8 of the cinder cars, making an aggregate of 26 tons, and that with a boiler pressure of only 120 to 125 pounds per square inch."—*Van Nostrand's Engineering Magazine.*

Geology and Mining in China and Japan.

THE Shanghai *News Letter* mentions the fact that Baron RICHTHOFEN, who went from California several years ago to prosecute geological observations in China, has partially completed his labors, and published briefly some of the results. Some of the points of his observations have heretofore been given in the *Bulletin*. The extent and availability of the coal resources in China seem to be greater than was supposed. Bituminous and anthracite are produced, though of an inferior quality, and at an expense which will barely enable it to compete on the Yangtse with imported coals. Its quality will improve with proper working, and its cost be reduced if railroads are allowed to be built. Baron RICHTHOFEN exhausted his own funds in making his observations, and was enabled to continue them only through the judicious liberality of foreign merchants at Shanghai.

If the Chinese Government would pay more attention to such matters, and permit the exploration of mines by foreign enterprise, it would derive great benefits therefrom. In this respect the Japanese are more enlightened and liberal. Several of the Daimios have lately shown a disposition to encourage mineral development by foreign skill. F. C. FARRINGTON, of Nevada, who went to Japan as private secretary to Minister DeLong, has been engaged to superintend the working of silver mines, at a salary of $400 per month. Capt. L. COFFIN, of Oregon and California, is examining the subject of gold mining in Japan, and thinks the quartz lodes and placers of the country only need proper working to prove of immense importance. Some of the Japanese now being educated at colleges in the United States, and especially those who are going through courses of practical science at Harvard and Yale, will doubtless create a new era in mineral development for their native country when they return.—*S. F. Bulletin.*

Important to Capitalists.

MESSRS. THOMAS & SONS will sell at auction, to close an estate, on Tuesday, June 14th, at the Merchants' Exchange, Philadelphia, one of the most valuable tracts of coal and timber land ever offered at public aution, located at Emporium, the county seat of Cameron County, Pa., comprising about four thousand two hundred acres, underlaid by five workable seams of superior bituminous coal, giving an aggregate of eighteen feet in depth, and an available mass of upwards of forty million tons; also valuable beds of iron ore, yielding by analysis 45 per cent. of iron ore, with sufficient limestone for manufacturing iron. The surface is covered with hemlock and other timber of superior quality. A large saw and shingle mill has just been completed, at a cost of $30,000, capable of cutting 2,000 feet of timber and 50,000 shingles per day; it is estimated that with proper management this mil will yield a handsome profit on the investment, without reference to the coal and iron product.

The property lies on both sides of the valley of the Driftwood branch of the Sinnemahoning Creek, up which passes the Trunk Railroad from Philadelphia to Erie, traversing the estate, and connecting it with New York, Philadelphia, Baltimore, Harrisburg; and the road now in process of construction will soon place it in direct railway communication with the Western cities.

Dry Washing.

A CORRESPONDENT of the San Francisco *Bulletin*, journeying through the northern mines of California, tells of a method of clothes-washing practised by the old-style miners still lingering in some parts of that now comparatively-deserted region, which we doubt not will excite the admiration of our thrifty New-England housewives. He says:—It was while on my way to Minshew that I met evidence of the primitive days of yore, in the manner of the miner's blue shirt stretched over an ant-hill at the foot of a pine tree. This is dry washing. In the hurry and excitement of gold-digging, men had rather scant wardrobes, and were somewhat indifferent about cleanliness of person. Naturally such a state of things generated an animated life that was not consistent with bodily comfort. When these tenants of seams and collar-bones became too numerous, our pioneer would disrobe himself, and, stretching his garments over the castles of the great red ant that abound in that section of the country, patiently wait the result. An army of the red warriors would invade the new territory, and when they left, the watcher might robe himself in garments perfectly free from vermin.

Steady Work and Good Pay in the Mines.

A GLANCE through the mining news of the present week reveals the fact that there is a great scarcity of laborers in the gold and silver mines of the West. The wages generally paid to ordinary workmen is from $18 to $21 gold per week.

Ship-building on the Clyde.

THERE are on the docks at one ship-building establishment in Glasgow, eight iron steamers, and two others are under contract, and will be commenced immediately.

Genetic Relations between Pozzuolana, Trass, and Santorin Earth.

Translated from "Die Hydraulischen Mörtel," of Dr. W. MICHAELIS.

By ADOLPH OTT.

II.

IN the depths of the craters, water has acted powerfully upon the trachytic rocks; the more so, since its action was submarine, at a high temperature and pressure, and in presence of sulphuric and muriatic compounds. It is well known how considerably the chemical forces of liquid and acid agencies are enhanced under such conditions. We only point to the complete decomposition of silicates by means of oil of vitriol in sealed glass tubes, and to the energetic action of pure water upon glass under the same circumstances. We are therefore certainly entitled to refer the transformation of the mother rock to the action of the sea water under the conditions referred to; especially, as in these volcanic formations sulphuric and muriatic acid are generally met with. An aqueous extract of the tufa yields nearly always a perceptible quantity of chloride of sodium and sulphate of soda, not to speak of the efflorescences which, to the keen observer, already betray the presence of these salts.

In the quarries of the Brohl and Tönnistein valley in the Eifel, for instance, an efflorescence is noticed, the composition of which is the following:

Potassa	51.69	Muriatic acid	6.71
Soda	12.08	Sulphuric acid	8.68
Carbonic acid	20.84		

The property of decomposing readily, possessed by pozzuolana, trass, and Santorin-earth, which, as we should not omit to remark, renders them especially suitable for the preparation of hydraulic mortars, is seen in the best light, if their behavior towards acids is considered.

The chemist employs for this purpose especially muriatic acid of 1.1 specific gravity at 15° C., corresponding to an amount of twenty per cent. of anhydrous acid.

We regret that not all the analyses we possess of pozzuolana, trass, and Santorin-earth, are made with such an acid, and that the degree of concentration of the acid employed is almost never indicated in the published results. The use of different acids, or different degrees of strength of the same acid, leads necessarily to more or less considerable discrepancies. While ABICH and the French chemists state that the Italian tufas are in the mean soluble to two-thirds, it follows from the analyses of ELSNER that they are only soluble to one-fourth. Of the trass, only half dissolved, and of the Santorin-earth, only a very small part, which, however, is satisfactorily accounted for by its acid nature. The analyses effected in this sense show that a more or less large part of the mass of the tufa referred to is easily acted upon by humid agencies. Such a humid agent of powerful action is also the hydrate of lime. Before, however, we shall consider its behavior towards the tufas, it seems proper to treat of the materials employed for the preparation of hydraulic mortars.

THE POZZUOLANAS IN GENERAL.

We designate these with the collective name "Pozzuolanas;" first, because the Italian pozzuolana forms their prototype in every instance; and, in the second place, because we do not wish to see the term "cement" applied in a two-fold manner, but would like to reserve it exclusively for a certain kind of hydraulic mortar. From an erroneously-interpreted passage of PLINY, it was formerly applied to all those materials that produced a hydraulic mortar when mixed with burned lime.

After the nature of the Italian pozzuolana and the trass had been sufficiently recognized, corresponding volcanic products were searched for elsewhere. In the Departments de l'Hérault and de l'Artéche, (the ancient Vivarais), in France, very similar pozzuolanas were discovered, the composition of which we append here, as published by VICAT:

	1	2	3	4	5	6	7	8	9	10	11
Silica	30.01	45.00	60.59	35.09	36.15	30.73	40.97	34.22	53.60	38.34	35.81
Alumina	17.72	16.58	14.15	17.65	10.11	11.63	15.92	12.02	20.89	15.76	25.58
Oxide of iron	14.03	15 58	7.96	16.82	23.74	24.92	18.70	25.90	18.16	20.44	11.08
Lime	4.64	9.57	2.21	4.26	4.27	3.73	0.47	4.14	1.70	1.70	2.56
Magnesia	—	8.60	1.34	3.17	3.80	2.49	0.34	4.12	1.14	1.14	1.70
Sand	21.29	0.67	—	3.95	6.17	7.48	1.59	3.70	5.11	5.11	4.26
Sol. s'bsta'ces and water.	12.98	5.00	13.75	18.06	15.02	19.02	22.01	15·90	17.51	17.51	19.01

1. Department de l'Hérault, of Mount St. Loup.
2. Department de l'Hérault, of Bessan.
3. Red pozzuolana of Mount Chastellas.
4. 5. Grey pozzuolana of the Mount Chastellas. (Ravin des Crouzets.
6. 7. Red pozzuolana of the Mount Chenavery. (North side. East side.)
8. Dark brown pozzuolana from Mount Chenavery.
9. 10. Pozzuolana from Mount Charay.
11. Pozzuolana (Chine des Corrans, Ravin de Moldarie.)

It appears that FAUJAS DE SAINT-FOND was the first who, in 1777, by order of SARTINES, then Minister of War, undertook to investigate the nature of these pozzuolanas. Yet it seems that the results were never published. Several years later, (1786), CHAPTAL took them up again. This chemist had proposed, in 1785, to employ ferrous clays and slates in lieu of natural pozzoulanas, and discovered that they yielded, with lime, a hydraulic mortar, equalling the Italian pozzuolanas. Comparative trials, made in Cette, convinced him that the pozzuolana of Hérault and the Vivarais were far inferior; they were not capable of withstanding the action of the sea water.

Somewhat earlier, the Swedes QUIST, GADD, and RINMANN, in experimenting with brick powder and burned alum slate, found that they were capable of setting under water. In the year 1772, a mortar invented by ULFSTRÖM, and consisting of lime, alum slate and lime water, was applied with good success at the locks of Arboga.

In the years 1805, 1806, and 1807, the experiments of his predecessors were fully confirmed by the Frenchman GRATIEN LE PERE. Then followed the elaborate trials on air and water mortars by the indefatigable S. VICAT, who in his country busied himself more than anybody else with this subject.

In the beginning of the second decade of this century, the Swede, G. E. PASCH, published quite an elaborate essay on mortar and cement, (JANKONTORET'S "Amalin"), wherein he declares burned alum slate to be the most appropriate artificial addition, saying that the mortar thus produced sets quickly and uniformly, notwithstanding also the action of the sea water. Burned clay is equal to alum; but he leaves it undecided which of these might be more effective in the course of time. He also mentions that brick powder acts similar to clay, and considers that of roofing bricks far the best.

[TO BE CONTINUED.]

American Institute Miscellany.

Scientific Items read at the meeting of the Polytechnic Club of the American Institute, May 26, 1870.

THE Chairman presented the following interesting items of scientific news:

EFFECT OF LIGHT ON CHLOROPHYLL.—The apparently spontaneous movements of grains of chlorophyll—which constitute the coloring matter of plants—when under the direct action of light, has been already observed. BORODINE, a Prussian botanist, has recently made more extended and trustworthy observations, by selecting for experiments a species of moss so transparent that the movements of chlorophyll in it can be perceived under the microscope without dissection. When kept in the dark a few days, the cells of this moss had the appearance of a green network, the interstices being a clear transparent ground. Under the influence of light, the grains of chlorophyll changed their position from the lateral walls, which separated the cells from each other, to the superficial walls, about fifteen minutes being required for this movement. After this the grains mutually approached and receded. On the withdrawal of light they assumed their first position on the lateral wall. The protoplasm which surrounds the grains and causes them to move in masses of network is supposed to be the vitalizing part of the cell.

AMBROSINE.—This name has been given by CHARLES U. SHEPARD, Sr., of South Carolina, to a mineral resembling both amber and rosin, which, he thinks, originated in some of the coniferous trees that existed during the pleiocene epoch in geology, when the phosphatic formations found in that State were in progress. It differs from any of the oxygenated hydrocarbons previously known. It melts into a clear, yellowish liquid at about 450° Fahrenheit, giving off a considerable amount of succinic acid before melting. After fusion it yields a volatile oil, which has a balsamic odor not unlike that from the resin of pines. Ambrosine is very combustible, and, burning without ash, gives a yellowish white light. It is soluble in alcohol, ether, chloroform, oil of turpentine, and in a solution of potash.

SIEMENS' STEEL.—Specimens of steel made by Mr. C. W. SIEMENS, in its various stages of formation, were shown at a *conversazione* in London, and excited considerable interest. The process of manufacture is, briefly, as follows: Good hematite ore and spathic ore are mixed and treated with carbonaceous materials, by which their total or partial reduction into metallic iron is effected. The metal is then subjected to very intense heat on the open hearth of a SIEMENS regenerative gas furnace, and in certain given quantities or series of installments is dropped into a bath of cast-iron previously prepared in the furnace. This operation is continued until the requisite degree of decarbonization is obtained; and manganese ore or spiegeleisen is added during the latter part of the process. The quantity of molten metal thus produced in one charge is about four tons; it is tipped into a ladle and poured into iron molds in the usual way, and forms steel of the highest quality. One ton of steel ingots may be produced by this process with a ton and a half of cheap small coal, while the ordinary Sheffield process requires five or six tons of fuel for one ton of steel.

THE ILLUMINATING POWER OF COAL GAS AT DIFFERENT TEMPERATURES.—Experiments have been made in the laboratory of the University of Munich to determine the extent to which the power of illuminating gas is affected by temperature, while that of air, which supplied oxygen for combustion, was not changed. The illuminating power of the gas at 64½° Fahrenheit being accounted 100, as the standard, it was found that when the gas was reduced in temperature, by applying cooling mixtures to the tube through which it passed, to 32°, its average illuminating power was 80°; and on reducing its temperature to 4° Fahrenheit its illuminating power was, in some cases, 33, or about one-third of its power at the standard. On the other hand, by raising the temperature of the gas to 212° Fahrenheit, its illuminating power was found to be 104, and on increasing its temperature to 288° Fahrenheit the illuminating power was found to be 118.

NEW TEST FOR ARSENIC.—BETTENDORF has found a test so delicate that one part of arsenic in 1,000,000 parts of solution may be detected, and the presence of antimony does not affect it. To apply this test, the suspected liquid is mixed with hydrochloric acid until fumes are apparent. Chloride of tin is then added, and a basic precipitate, containing the greater part of the arsenic as a metal mixed with the oxide of tin, is thrown down.

ALBUMEN FOR INDUSTRIAL PURPOSES.—It is generally known that large quantities of albumen are consumed by certain industries, yet many will be surprised at the statement in the Paris *Cosmos*, that the cloth printing works of Europe alone use the albumen of not less than one hundred and fifty millions of eggs annually. This seems to be a great waste of valuable food. The albumen from the blood of slaughtered animals has long been utilized in several branches of the useful arts, and it has been proposed to use the eggs of fish for similar purposes. As yet, however, no source of albumen is found so cheap as that of eggs of domestic fowls.

Hot Blast Stoves.

AT the meeting of the Institution of Civil Engineers, held on the 17th of May, CHARLES B. VIGNOLES, Esq., F.R.S., President in the chair, the paper read was "On Recent Improvements in Regenerative Hot Blast Stoves for Blast Furnaces," by Mr. E. A. COWPER, M. Inst. C. E. Of this paper, the following is an abstract:

The author stated that when, in 1828, the late Mr. J. B. NEILSON (M. Inst. C. E.) introduced the plan of heating the air employed as blast, by means of iron pipes placed in or near a fire, the increase of temperature was at first only from 60 to 100 degrees, Fahrenheit. Subsequently, Mr. NEILSON obtained a temperature of 600 or 650 degrees, and the pipe stoves had since been urged up to 900 degrees, and in a few cases to 1,000 degrees. The wear and tear, however, with such temperatures of blast were considerable; there was a great loss of heat by conduction, and the pipe stoves were, as a rule, worked in a leaky condition, necessitating the expenditure of engine power for blowing air uselessly.

The improvements described in the paper were based upon Mr. SIEMENS's regenerative furnace. Each stove of a pair consisted of a wrought-iron cylindrical casing, lined with fire-brick, and provided with a central shaft or flue, which extended to within a few feet of the brick dome forming the top. Around this shaft there were a number of compartments, or boxes, formed of bricks so placed that those in one course were not exactly coincident in position with those in the courses either above or below, though a passage was left open from the bottom to the top of the mass of brick-work. This wrought-iron casing was provided with several valves, three being for the admission of coal blast, of gas, and of air for combustion, and two being for the exit of the hot blast and of the products of combustion. When a stove had been at work heating blast, and it was wanted to reheat it, the first thing to be done was to put another stove in operation, then to shut the hot and the cold blast-valves, allowing the air in the stove to be blown out at a small valve to reduce it to atmospheric pressure. The gas, air and chimney valves were next opened, and the gas, igniting as it entered, gave a large volume of flame right up the central shaft, and over and into the regenerator, thus heating the top course of brick-work considerably, the next course rather less, and so on, the products of combustion passing away to the chimney at a temperature of about 3,000. In the course of a few hours, a large amount of caloric was stowed up in the bricks forming the regenerator, a good red heat penetrating nearly to the bottom, when the stove was again ready to heat the blast to a temperature of 1,400 or 1,500 degrees. In these stoves the cost of dust-catchers was avoided, and the expense of producing gas was also saved, as the gas was used direct from the top of the blast furnace, and the stoves could be cleaned out with the greatest facility. The construction of the regenerator in compartments, or boxes, connected together vertically but not horizontally, gave the power of applying the blast with efficiency, (inasmuch as the old force of the blast was confined to the one passage that was being blown at the time), and admitted of a brush being passed up or down the boxes to remove the dust. The form and proportion of the passages had been found, after numerous experiments, to produce an excellent effect in mixing the air, thereby insuring a rapid and perfect conduction of heat from the bricks to the air, or *vice versâ*, from the products of combustion to the bricks.

The results obtained by the Messrs. COCHRANE, from the adoption of these stoves at Ormsby, as regarded the quality of iron, the increased make, and the saving of coke in the blast furnace, had been most satisfactory. Thus there was a saving of 4 cwt. of coke per ton of iron produced, by the use of the regenerative stoves for heating the blast, when compared with good cast-iron pipe stoves, and the saving was still more over ordinary pipe stoves. With a large furnace, producing 475 tons a week, the first cost of these stoves was somewhat less than the cost of pipe stoves, while the expense of working was less, so that the profit, taking everything into account, was estimated to amount to about £4,162 a year.—*Engineering.*

Another First Bar of Tin.

TO THE EDITOR—Sir: A late number of your paper says "The first bar of tin made in the United States has been presented to the Secretary of the Association of California Pioneers, in San Francisco." Thinking our own State of New Hampshire entitled to the honor of furnishing the first bar of tin in the United States, I give the following extract from Dr. JACKSON'S "Geology of New Hampshire:

"The average of a lot weighing one hundred pounds, obtained by two men in two days, was from 35 to 40 per cent. A lot of small ore, weighing 22 ounces, was operated upon at once, and yielded 11½ ounces of fine tin, which was cast into a flat ingot, one-half of which was sent to the National Institute at Washington, and the other was placed in the Cabinet in the State House, at Concord, with specimens of the ore from which it was obtained."

JOHN A. RIDDLE.

MANCHESTER, N. H., June 6, 1870.

A Good Chance.

As will be seen by the card of Professor G. W. MAYNARD, of the Rensselaer *Polytechnic*, published in another column, that gentleman is open to engagements during the summer months. Professor MAYNARD'S reputation and experience render his services highly valuable to those who can secure them; but it is only during the vacation which releases him from his arduous professional duties at Troy, that he can undertake field-work requiring the expenditure of considerable time. As mining enterprises are expected to revive next fall, it is now time to make the necessary preliminary examinations.

THE ENGINEERING AND MINING JOURNAL.

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ROSSITER W. RAYMOND, Ph. D., Editor.

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Krupp's Guns.

AMONG the remarkable improvements in the manufacture of heavy ordnance which have been effected in modern times, none have more generally attracted the attention of military and mechanical engineers than the cannon produced at the celebrated establishment of FRIEDRICH KRUPP, at Essen, in Rhenish Prussia. KRUPP'S guns are particularly worthy of attention for two reasons:

1st. The material is mild steel—a metal which in many respects is theoretically the best for the construction of cannon, but which, on account of the practical difficulties and the expense of manufacture, has not been adopted to any great extent by any nation.

2d. Most of these guns (even those of the largest caliber) are breech-loaders—a form of construction rejected by English and American experts for heavy ordnance.

By a modification of the ordinary process of making cast-steel peculiar to himself, Herr KRUPP has succeeded in manufacturing the largest and most perfectly homogeneous ingots of this metal that have yet been produced.

The great peculiarity in the manufacture of his *solid* guns, consists in forging them from single homogeneous ingots without seams or welds. The results obtained with field-pieces manufactured in this way are remarkable.* "In 1857, two 4.88-inch 12-pounder smooth-bore muzzle-loaders were put to extreme test in Paris; it was impossible to burst them or to injure them by firing. In a former trial, an experimental 12-pounder of this manufacture had endured 1,400 rounds with 4.4 lbs. of powder, 600 with 3.3 lbs., and 1,000 with 3 lbs., without alteration. It afterwards burst at the fourth round, with two balls and 6.6 lbs. of powder. The two guns referred to were fired 3,000 times each, with 3 lbs. of powder and one ball. One of them was then fired at and indented, and finally broken to pieces. The other was fired 20 rounds with 6.6 lbs. of powder and two balls, 10 rounds with 6.6 lbs. and 3 balls, and 6 rounds with 13.2 lbs. and 6 balls. Neither of the guns were altered in the slightest degree by all these rounds; and it was determined not to burst the one that remained whole."

"A 12-pounder, sent by Herr KRUPP to Woolwich for test, was filled to the muzzle with powder, shot, and broken shells, but could not be burst, and was returned with the cascable knocked off, the gun having been thrown high in the air by the force of the explosion."

The largest solid steel guns which have been produced by HERR KRUPP are the 8 and 9-inch shunt-rifled guns furnished to Russia in 1863. The experiments with these guns at St. Petersburgh have been thoroughly discussed, and have been the subject of much warm argument. Their behavior, however explained, cannot be regarded as very satisfactory; and we are not surprised to see Herr KRUPP turning his attention to a form of construction theoretically more perfect.

It is a sufficiently well established principle in the manufacture of cannon, that the interior of the gun should be, when out of action, in a state of compression, and the exterior, at the same time, in a state of tension. Moreover, the internal compression should diminish in an outward direction, and the external tension in an inward direction, down to an intermediate zone of neutrality. Otherwise the material forming the interior would, under the action of an expansive force, be stretched to the breaking point, before the exterior was subjected to anything like a corresponding tension; and the aggregate resistance would therefore be less than if every part were bearing its due proportion of the strain.

In the manufacture of heavy ordnance in the United States, this principle is realized by means of the interior-cooling process of General RODMAN, a process which has revolutionized the manufacture of cast-iron smooth-bore guns. By cooling the interior portion first, the external metal is made to shrink upon it, and thus the required condition of interior compression and exterior tension is obtained.

The same condition is secured in *built-up* guns like those of PARROTT, ARMSTRONG, BLAKELY and WHITWORTH, by stretching one layer upon another, using either the same material throughout, or hooping with a different one.

It is this method which Herr KRUPP has adopted in his later guns, and with which he has produced such good results. The 11-inch rifled steel gun made at Essen, in 1868, for the Russian Government, is the largest breech-loader that has ever stood a practical test. It consists of a cast-steel inner tube, with seven hoops of the same material. It weighs, including the breech-piece, 52,000 Prussian (or 57,304 English) pounds. The rifling consists of thirty-six grooves, of 770.0 inches and 788.8 inches pitch. The total length of bore is 160.2 English inches. The weight of the projectile is 496 English lbs., the weight of the charge 82½ English lbs., of Russian prismatic powder. The initial velocity communicated by this charge was 1,308 English feet.

The Administration of the Russian Artillery fixed upon 400 rounds as the trial for this gun, and the board of officers appointed by the Russian government to conduct the experiments report that the gun stood the 400 rounds with this charge, and remained in a perfectly serviceable condition.

It is but fair to notice that Herr KRUPP does not regard this gun as equal to the 11-inch guns which he has since produced. It was originally intended for a muzzle-loader, and was nearly completed as such; but the definitive adoption of the breech-loading principle by the Russian government necessitated its conversion into a breech-loader. Consequently this gun has not the necessary length of bore; and, moreover, its chamber is concentric with the bore, while the guns of the new construction have eccentric chambers. To this latter circumstance, and to the fact that in re-boring the gun rough places, offering points of attack for the gases, could not be avoided, Herr KRUPP ascribes the guttering in the front part of the chamber, which was observed to commence after fourteen rounds, increased comparatively with much greater rapidity than at previous trials with a 9-inch breech-loader, and reached at last an extent which it did not attain in the smaller pieces. The performance of this gun in piercing the celebrated "Hercules" target is already famous. The target, constructed in 1865, to test the ARMSTRONG 300 and 600 pounders at Shoeburyness, consisted of 9-inch iron armor plate, and three inner iron skins, each of one inch, combined with 12 inches of teak and 24 inches of oak. This target was pronounced by Mr. REED, the great English authority on iron armor, positively invulnerable; and *Engineering* declared it to be, "no doubt, proof to any single shot fired from any gun that existed in the world." But the official report of the Russian ordnance select committee declares that, at about 840 yards range, the projectile of the KRUPP 11-inch breech-loading rifled gun passes through the entire shield, and far beyond; that at about 1,167 yards, it still passes through, though its surplus living force is reduced; and that at 1,983 yards, it pierces the shield, and buries itself in the backing, having penetrated its entire length.

We may hereafter discuss the bearings of these facts; it is sufficient at present to remark, that they establish the superiority of the KRUPP gun in this respect to the heaviest ARMSTRONG gun, and its effectiveness, at a considerable range, against the strongest armored ships yet built.

The breech-loading system, though not without its peculiar defects, has undoubtedly great advantages in its application to ordnance of small calibre. It dispenses with the rammer, increases the rapidity of fire, and furnishes a simple means of forcing the projectile, a result not easily attained in muzzle-loaders. With heavy ordnance, however, its advantages are by no means so unquestionable; and its defects are much more decided. The element of weakness introduced by the necessary joint at the breech is evidently a far more serious evil in a gun which is to carry the greatest weight of projectile, and endure the most powerful charge, than in a field-piece working with light charges, in which an excess of strength can be easily obtained. Moreover, it seems doubtful whether it secures, in such cases, much increase in the rapidity of fire, since the heavy breech-piece has to be removed and replaced at every charge. There is, on the other hand, an important saving of space when the breech-loading system is employed, and the men are much less exposed in the operation of loading.

Of all the breech-loading arrangements yet perfected, that of Herr KRUPP, it must be admitted, is the most satisfactory, and has best stood the test of experiment. It consists of a block, sliding in a horizontal mortise crossing the bore of the gun. This block is started out by means of a lever fastened to and bearing against the side of the piece. The gas-check is the "BROADWELL ring," a steel ring placed in the end of the bore and bearing against an undercut copper ring, placed in a recess in the sliding block. These rings are forced together by the explosion.

The success of this combination, as shown in the experiment, was so complete, and the working of the sliding-block so satisfactory, that we should be inclined to regard the arrangement as the most perfect that can be devised for heavy ordnance, were it not for our grave doubts, already briefly expressed, as to the advisability of any breech-loading arrangement for guns of large calibre. We have barely touched on this subject, and our limited space will not permit us to pursue it further. It is sufficient evidence of the doubtful utility of this method of construction, that the opinion of those who have had the most experience is against any breech-loading system for the larger guns.

But Herr KRUPP'S crowning achievement in this branch of manufacture is his mammoth steel rifle, exhibited at the Paris Exposition in 1867, which he has since presented to the King of Prussia. This gun weighs fifty English tons, and, with its carriage and turn-table, ninety tons. In construction, it is similar in most respects to the later 11-inch gun of the same manufacturer. It consists of a steel tube, seventeen and a half feet in length, hooped with three heavy steel rings. The diameter of the bore is 14 inches, and the weight of the solid steel shot is 1212 lbs.—the heaviest projectile that has yet been attempted. The shell weighs 1080 pounds, and carries a bursting charge of only 17 lbs. of powder. The deep grooves required to hold the lead jacket cut away so much of the shell, that there is no room for a heavier bursting charge. The service charge varies from 110 to 130 lbs. The breech-loading apparatus is similar to that already described.

This gun has not been proved, although we believe it has been fired; and we therefore do not propose at present to enter upon a discussion of its merits. Its manufacture is, in any event, a remarkable undertaking. The inner tube, weighing 20 tons, was forged under the 50-ton hammer from a massive ingot of 40¼ tons, the waste in turning and boring being therefore over 50 per cent. The steel rings, weighing altogether 30 tons, were manufactured in a manner similar to the tires for railroad wheels, from heavy masses and without welding.

We cannot pause to notice the interesting comparison which has been made between the ordnance of Herr KRUPP and the great English guns; or to indicate the progress which has been made in our own country in this branch of manufacture.

It must be a source of satisfaction to all lovers of peace that progress in the mechanical arts so strongly favors defence. There is a practical limit both to the power of attack and the power of resistance of a ship of war; we cannot gain in weight of armament without losing in weight of armor. The increase in the size of guns renders it difficult to transport them or to work them in a limited space; and no armor has yet been devised which a ship can wear at sea which will resist the power of modern heavy ordnance. With land defences no such limiting conditions exist. The loss in rapidity of fire incident to an increase in weight can be compensated by multiplying the number of guns. The condition of immobility admits of the attainment of almost any required degree of resistance. Torpedoes, obstructions, and many other auxiliaries are being rapidly brought to perfection; and it seems not unreasonable to look forward to the day when the defence will have so marked an advantage that nations will abandon the arbitrament of arms and settle their disputes by more peaceable and rational methods. In the interests of humanity, therefore, we rejoice in these improvements in the art of defence; and in this spirit we welcome the monster peace-makers of Herr KRUPP.

* Holley's Ordnance and Armor.

Continuous Jigging.

IF two bodies of different specific gravities—say, a piece of cork and a piece of lead—be allowed to fall from the same height at the same instant, they will reach the ground at precisely the same time, provided there be no medium in their path to prevent the free action of the earth's attraction, or, in other words, if they fall through a vacuum. If the two bodies be of the same size and shape and of different specific gravities, and the medium which resists their falling freely be air, the body which has the greatest density, i. e. the greatest specific gravity, will reach the ground first. Now, if we either take a denser medium than air—for example, water—or increase the height from which the bodies fall, the difference in the time occupied by the two bodies in falling will be greater. Suppose we take a small cube of galena and a cube of quartz of the same size, and determine by experiment the time that it will take each of them to fall through a cylinder two feet high, filled with water. Now, if we supply water to the cylinder at the bottom, in such quantity that in the time that the heavier of the two consumes in reaching the bottom, the water in the cylinder has been completely changed, it will of course be equivalent to having allowed the bodies to fall through a column of water four feet, instead of two feet high. If this supply of water be so arranged as not to be continuous, but started and cut off at short intervals, the result will be much more marked. This is owing to the fact that the lighter body is raised more by the upward thrust of the water than the heavier. The distances that the two bodies would be raised by an upward motion of the water, is inversely proportional to their specific gravities; or, taking our cubes of quartz and galena, as 75 is to 26, or nearly three to one. That is to say, if the water were raised quickly from the bottom, sufficiently to raise the piece of quartz a quarter of an inch, the piece of galena would only be raised one-twelfth of an inch. The same result may be reached by imparting the motion, not to the water, but to the sieve on which the ore is placed.

This, in brief, is the principle upon which all jiggers are based. The operation of this principle alone would separate the ore treated into layers, which would afterwards have to be scraped off and the valuable portion separated from the worthless, in an analogous way to that of dividing the deposit on a Cornish buddle. This form of jigger was in fact the one first used. The ore was first carefully "sized," thrown upon a sieve, the texture of which was too fine to admit the passage of the grains through it, and immersed in water. A rapid up-

and-down motion was then imparted to the sieve, by hand, for a short time, after which it was removed from the water. and the ore was found in the layers described. If the ore to be separated was heavier than the gangue, the valuable portion would be at the bottom, the worthless on top, and in the middle a considerable portion which was neither one thing nor the other, upon which the process of jigging would have to be repeated. It was, moreover, a slow and laborious operation, and much time was lost by the repeated stoppages.

A continuous jigger then made its appearance, to remedy these defects. This consists, in its most approved form, of a rectangular box, which may be made of eiter iron or wood, generally of the latter material. This box has a longitudinal division which reaches below the surfaces of the water, but leaves an open space below. The two halves thus formed are again subdivided by a cross-partition. On one side of the long partition there are wooden pistons, fitting loosely, reaching a trifle below the surface of the water, and worked up and down by an eccentric and rod. In the other side of the long partition are placed stationary sieves, which are covered with a layer of small fragments of the ore to be dressed.

We have recently examined with care and interest a machine of this kind, made and patented by Mr. ROBERT G. MORTON, of Jersey City. A description of this machine, which we regard as the best that we have ever seen, may be of interest to our readers. Mr. MORTON retains the rectangular box, which he makes of iron, the longitudinal partition, the sieves and layer of granulated ore upon them, but divides the whole box by three cross-partitions into four pairs of chambers, which have no connection with each other below the water-line. Each front chamber is, however, connected with the corresponding back one, thus constituting what we have called a pair. Iron frames, which are securely fastened to the rubber-cloth forming the top of each back section, are raised and allowed to fall by cams, which run on friction rollers in each frame. This imparts an up-and-down motion to the water, so that when the water is raised in the back section it is lowered in the corresponding front one. In the front chambers, two or three inches below the water level, are fastened sieves, which are covered with a thin layer of the ore which is to be dressed, the pieces being so large that they will not pass through the sieve. The crushed ore is then carried by a current of water on one end of the sieve. The ore already on the sieve is made to dance up and down by the motion of the water, so that only those particles whose specific gravity is the same as, or greater than "the bed," can pass through the sieve, since the heavier particles settle first and prevent lighter ones from ever reaching the sieve at all, and these are finally carried by the current over all four sieves, and discharged through the overflow at the opposite end from the feed.

In order to perform good work, a jigger must be very carefully adjusted, both with regard to the supply of water and the amount of vibration given to the water in the box. When both of these cannot be changed, it is necessary to have a separate machine for each kind of ore to be dressed. Mr. MORTON'S machine is, however, so constructed that by simply altering two set-screws, it can be at once adapted to any kind of ore. This is an advantage not possessed by any other jigger of which we have knowledge. In localities where water is scarce, the same water can be pumped up and used over and over again. Machines of the same kind, but not nearly so perfect in construction, have done splendid work for the Vieille Montagne Company, in Europe, in dressing lead and zinc ores. In the Hartz, jiggers have replaced the old dressing machinery almost entirely for many grades and sizes of ore. We may rest assured that the principle is a good one, and we hope that the very ingenious and complete application of it devised by Mr. MORTON may be brought into extensive use. The inventor, like many worthy members of that class, is without the capital required to push his machine into notice; and we have volunteered this account of it, in the hope of directing to a worthy enterprise the attention of those who can appreciate its value.

Evanston (Rocky Mountain) Coal.

THE *United States Railroad and Mining Register* publishes the following account by PERSIFOR FRAZER, Jr., M. E., of this interesting coal deposit: Nine hundred and fifty-seven miles west of Omaha, between Church Buttes (where the most of the Rocky Mountain moss agates are found) and the Wahsatch range of mountains, near the Utah line, is the small and unpretentious station of Evanston, on the Union Pacific railroad. From Granite cañon, four hundred and twenty-two miles to the east, to this place you have been running through successive ranges of mountains, over broad valleys, and across streams of considerable magnitude; and of the latter you have left the Green river in your rear about nine hours ago. It is four o'clock in the morning as you descend from the platform of the car and allow your eyes to sweep around the landscape before you. Some of the highest of the snow-covered peaks of the middle Rockies are to the south-east of you. Detached chains and apparently isolated peaks are observed to the north and south, while the railroad continues its course westward a short distance south of some unpromising-looking high mountains, where the coal bed is located which has made this place famous. A mile or so westward from the station, the Union Pacific railroad is intersected by a branch-road belonging to the Rocky Mountain Coal and Iron Company, and following up this branch for about a mile or more after crossing the Bear river, you come to the mine. The hills in which this mine is situated are perhaps from three hundred to five hundred feet in height, and appear to conform in direction to the course of Bear river, running nearly north and south to the site of the works, and then sweeping round with the river to the east. They are composed of partly arenaceous and partly argillaceous strata, and are very much worn down, and weathered into a succession of rounded spurs with narrow ravines or gulches between. Above the coal there are to be found, in places, over a hundred fossils, chiefly of deciduous leaves, very much resembling species now living.

The company has taken advantage of the conformation of the hills to drift into the nearly horizontal coal stratum in different directions. At a point where the drift has been so made as to leave a fine exposure of the coal bed and the super and subjacent rocks, the former measured twenty-six feet, interstratified with fine layers of drab clay. I was informed that deeper in the hill the clay runs out and the coal improves in solidity and quality. Last November there was an immense amount of coal taken down, but not removed from the drift, from which I selected several specimens for analysis and presentation to the Academy of Natural Sciences; but these, by some unfortunate mistake, are yet lying at the mines. The general properties of the Evanston coal—its resistance to the disintegrating influences of the weather, its comparative freedom from sulphur, and its calorific effect—place it in the foremost rank of Rocky Mountain coals. A very small specimen which I analyzed in Cheyenne was *absolutely free* from sulphur, and gave a lead button, when treated by BERTHIER'S process, corresponding to 72.16 per cent. of reducing element. This, as I have discovered later by a series of examinations of other Rocky Mountain coals, is not a fair determination of the fixed carbon in the coal, on account of the comparatively high percentage of volatile substances (hydro-carbons) which these coals contain. In the course of a series of analyses of a great number of such coals recently made, there was but one other which showed as high a percentage of coke as the Evanston coal. From this branch railroad Y's have been constructed into the drifts, which are but little above the general level of the road, so that every facility of transportation is afforded. The average of a number of analyses made of this coal show:

Water	5.83
Volatile substances	37 40
Coke (carbon)	49 50
Ash	7 46
Sulphur	a trace
Total	100.19

Specific gravity, 1.341.

Coal black, even in powder; lustre, highly resinous; fracture, like the other coals of the class, irregular and conchoidal; it appears better able to resist the action of the atmosphere than the other tertiary coals examined, and is not near so friable.

The extent of this vein in "strike" is unknown, or, at least, I could obtain no reliable data concerning it. I was unable to visit the iron mines of the company, but enclose a letter kindly furnished me by the President, in which these as well as the coal are described. The Rocky Mountain Coal and Iron Company, incorporated in Wyoming Territory, with a capital stock of $1,000,000, has Mr. F. DEIFENDORF for President and Superintendent, resident at Evanston, Wyoming Territory, who has added the following items of information respecting these remarkable and important mines: "They were discovered by one of the members of this company in the fall of 1864, but were not opened for commercial purposes until about the time the Pacific road was completed to Evanston in October, 1868.

"The branch railroad to the mine was completed in November, 1869, since which time cars have been loaded at the mine and shipped to all points on the Union and Central Pacific Railroads. The distances being 957 miles east to Omaha, 70 miles west to Salt Lake, and 955 miles to San Francisco.

"The coal vein, nearly in horizontal position, and extending along the face of the Bear River Mountains, north and south, for about one and a half (1½) miles, varies from *twenty-six to forty-two feet in thickness*—and has been traced by the blossom or cropping some three (3) miles east.

"The coal is very peculiar, between anthracite and bituminous, *entirely free* from all trace of sulphur, burns without smell or smoke, and deposits nothing but a small per cent. (2 6.10) of white ash—it contains but 3 4.20 per cent. of water and from 70 *to* 74 *per cent. of fixed carbon.* It is used in the locomotives of the Union Pacific, Central Pacific, and Utah Central Railroads, and makes on the passenger locomotives about eighty (80) miles run per ton of two thousand (2,000) pounds; it is entirely free from clinker, does not burn out the fire boxes, and is *universally* conceded by *Master Mechanics and Engineers* to be the *best and most convenient coal for steam purposes in America.* Some one hundred and fifty tons per day are mined at this time (23d April), but the mine is opened for four hundred (400) tons per day, which can be increased to twelve hundred (1,200) tons whenever the demand requires it.

"North of the coal mine some mile and a half (1½) and contiguous to them, is the iron property of the Rocky Mountain Coal and Iron Company; this is a mountain of a mixed oxide and carbonate of iron, which assays from the surface thirty (30) to thirty-five (35) per cent. of *metallic iron*—thirty-two (32) per cent. of carbonate of lime, and is entirely free from sulphur and phosphorus; it is inexhaustible in quantity. The company proposes, during the ensuing summer, to erect a blast furnace of fifty (50) tons per day capacity for the manufacture of *pig iron.* Owing to the proximity of the coal to the iron ore, it is believed that pig iron can be manufactured for less cost at this point than at any place in Pennsylvania or Ohio, being midway between Omaha and San Francisco; the iron acquires an additional value from the saving in transportation."

Upon this the *Register* remarks: "The italics in the above description are the writer's, not ours; they will serve to point out the features to be commented on. There is always a little exaggeration by owners, superintendents, and agents; human nature insists upon that, and the world accepts the situation. When Mr. DEIFENDORF underscores the assertion that his coal is *unanimously* conceded by experts to be the *best* and *most economical* coal *for steam purposes* in America, he puts it unwarrantably strong; and all we understand him to assert is that it is a coal very hard to beat—for locomotives—anywhere. And that is saying enough for any coal.

"The *mountain of iron* ore is a verbal expression open to the same reproach of inaccuracy. But everybody knows that Mr. DEIFENDORF merely uses a Western exaggeration for 'large quantity,' and nobody will be deceived by it. A geologist would say—and Dr. HAYDEN *has* said—that there exists in the hills north of the coal openings, layers of clay iron-stone, of great value to the people of the far West, and of a rather remarkable constitution, because of the high percentage of iron *and* lime at the same time. Thirty-three (33) per cent. of metallic iron is about the average yield of all this sort of ores, scattered through the bituminous coal measures of the Eastern States, and they all contain more or less carbonate of lime.

If the analysis of this Evanston ore be an average standard for all the ore in the hill, and if the ore-balls are close enough together to be mined economically, then the presence of lime will obviate the need of seeking other flux, and the expulsion of the carbonic acid gas in such great quantities will leave the ore in an uncommonly porous and fusible condition."

The American Institute Fair.

THE Board of Managers of the American Institute announce that the Fair for 1870 will be held in the Empire Skating Rink, on Third avenue, between Sixty-third and Sixty-fourth streets. The building has been enlarged, and otherwise improved, so as to be in every way more suitable for the proposed exhibition. It will be open for the reception of goods on Monday, August 29, and on Wednesday, September 7, the grand exhibition will be formally opened to the public, by an address at 12 o'clock M. It will remain open every secular day from 9 A. M. to 10 P. M., until Wednesday evening, November 2, when the closing address will be delivered, and awards to successful competitors will be announced.

The exhibition will be divided into seven departments, each containing seven groups, or subdivisions, to be known as follows: "The Department of Fine Arts and Education," comprising paintings, sculpture, musical instruments, engravings, specimens of printing, book-binding, philosophical and mathematical instruments, etc.; "The Department of the Dwelling," comprising apparatus for cooking, warming, illumination and ventilation, kitchen-ware and utensils, carpets, tapestry, furniture, cutlery, building accessories, etc.; "The Department of Dress and Handicraft," comprising ladies' and gentlemen's apparel, cloths, woven, knit or felted fabrics, sewing-machines, medical and surgical apparatus and instruments, jewelry, writing-desks, trunks, etc.; "The Department of Chemistry and Mineralogy," comprising soaps and all cleansing compounds, artificial fertilizers, soda and mineral waters, wines, disinfectants, leather, India-rubber, plants, dye-stuffs, flour, building-stone, etc.; "The Department of Engines and Machinery," including stationary engines, pumps, machinery for working metals or wood, for preparing fibres and tissues, for grinding and crushing grain, etc.; "The Department of Intercommunication," comprising locomotives, cars, carriages, models of vessels and apparatus for steering them, telegraphs, fire-engines, safes, hoisting-apparatus, army apparatus used in movements or in camp, ornamental work for churches, cemeteries, etc.; "The Department of Agriculture and Horticulture," for plants, flowers, fruits, vegetables, agricultural implements, products of the soil used in the arts, etc.

There will also be, this year, in addition to the usual premiums, a great medal of honor, designating the highest prize, to be awarded to the inventor of some new and original machine, product or process never before exhibited at the Institute fairs, which shall be adjudged so important in its use or application as to supplant every article previously used for accomplishing the same purpose, and to work a favorable revolution in some branch of the useful arts.

Human Remains below the Lava of California.

TO THE EDITOR: Sir—I see by your journal of May 17th that more evidence is wanted with regard to fossil remains in the deposits underlying the lava beds of California. Now, I have it in my power to add somewhat to that information.

In 1853, my companion and myself sunk a prospect shaft on Clay Hill, El Dorado county, through, first, some ten feet of an old lava bed, and then twenty feet of gravel and clay deposits to the bed rock. About a foot above the rock, in a firm stratum of gray sand and clay, my companion sent up in the bucket the clavicle, scapula, and ribs of the right side of the chest of a human skeleton. They were so perfect that I readily recognized them, and directed him to make further search for the remainder. As it was nearly dark, and our prospects were unsatisfactory, we concluded to defer until another day any further search for either gold or fossils. I preserved what we had of the skeleton, and presented it to Dr. VARNEY of Placerville, El Dorado county. I never disturbed the shaft again, as I at that time felt no interest in such subjects.

I have no doubt that Professor WHITNEY will be sustained by further discoveries along the old river bed of the mountain district. In another place, in sinking a prospect shaft, we came upon a large deposit of drift wood, which it gave us considerable trouble to remove. Over the drift in this case there was a considerable thickness of basaltic lava.

GENEVA, Wis., May 27, 1870. W. W. BOYCE.

Iron Rails in Canada.

A SENTENCE in the last report of the chief engineer of the Great Western Railway of Canada is so significant that we quote it without comment: "Very serious defects pertain to a large proportion of all the rails imported from England of late years, and the consequence is, that all the leading railways are now either introducing steel rails, or they are purchasing American rails manufactured from a superior quality of native iron."—*Pall Mall Gazette.*

MINING COMPANIES AND STOCK QUOTATIONS.

GOLD AND SILVER COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
Alameda Silver		A. Queran, 108 Wall st	$2,000,000	$10 00		
Ada Elmore	South Boise, Idaho					
American Flag	Nevada District, Col	P. P. Fullerton, 71 B'way	600,000	10 00		
Atlantic and Pacific	Humboldt Co., Nevada					
Bates and Baxter	Colorado			50 00		
Benton	Colorado	W. F. Drake, 15 Broad	500,000	5 00	06	08
Briggs	Colorado	J. P. Davies, 19 Cliff	1,000,000	100 00		
Black Hawk	Colorado	C.T.Whittington, 48 Broad	2,500,000	100 00	27	30
Bobtail	Colorado	J. Stanton, Jr., 25 Nassau	1,000,000			
Bullion Consolid'ed Gold	Colorado					
Burroughs Gold	Colorado					
Central Gold					19	21
Consolidated Gregory	Colorado				1 60	1 70
Combination Silver	Nevada			100 00		
Columbia Silver	Austin, Nevada	J. M. Brown, 155 B'way	5,000,000			
Commercial Silver		J. E. Smith, 26 Pine	3,000,000			
Corydon	Gilpin Co., Colorado	J. Samuels, 40 B'way	500,000			
Downieville	Colorado		2,500,000	25 00		
Eagle Gold	Gold Dirt Dist., Col	J. P. Davies, 19 Cliff	300,000	1 00		
Empire Gold and Silver	BodicBluff, MonoCo, Cal	H. K. Gates, 70 B'way	1,000,000			
Edgehill		A. Fullerton, 71 B'way	10,000,000			
Esperanza Silver		Ezra Clark, Jr., 13 William	400,000			
Fisk Gold		H. Johnson, 195 Fulton	500,000			
Forest Queen		E. B. Beet, 62 B'way	1,000,000			
Golconda Gold	Sherbrooke, C. E	H. Adams, 71 Broadway	2,000,000			
Gunnell Gold	Colorado	J. H. Rolston, 80 B'way	1,000,000	50 00		
Gunnell Central	Colorado	C. B. Bostwick, 16 B'way	3,000,000	10 00		
Gold Rock		R. M. Lockwood, 93 Wall	400,000			
Grass Valley					20	21
International Silver		J. W. Brazier, 26 Pine	600,000			
Hope Gold	Colorado		5,000,000			
Holman			2,000,000	25 00		
Kipp & Buell	Colorado		300,000			
Knickerbocker Gold		J. H. Rolston, 80 B'way	200,000	100 00		
La Crosse Gold	Nevada Dist., Col	P. P. Fullerton, 71 B'way	1,000,000		8	11
Lander Hill T. & S	Nevada	M.L.Catherwood, 74 B'way	1,000,000			
Lewis Gold	Georgia		1,000,000			
Liberty Gold					01	02
Manhattan Silver	Nevada	M. L. Ogden	400,000			
Maraposa common	California	Jas. H. Ferdon, 34 Wall	12,000,000		7	8½
Mariposa preferred	California	do. do.			16½	16¾
Montana Gold		G. De Cordova	400,000			
Montana M. L. & M. Co.	Montana	A. M. Hoyt, 22 William	250,000			
Montrose	Clear Creek Co., Cal	W. W. Perkins, 71 B'way	1,000,000			
New York Silver	Nevada	Thos. Sproull, 78 B'way	1,500,000			
New York and Austin	Nevada	E. R. Siccomb, 70 Wall	500,000			
New York and Owyhee	Owyhee Co., Idaho		1,000,000			
New York and Eldorado		G. H. Munroe, 10 Wall	2,000,000			
N. Y. & Montana M. & D.	Montana	F. A. Chapman, 20 Nassau	1,250,000			
N. Y. & Silver Peach	Nevada	R. C. Root, 74 B'way	2,000,000			
N. Y. & Utah P. & M		W. H. Mailler, 108 Wall				
Nye						
Ophir Gold	Comstock Lode, Nev	L. C. Warner, 70 B'way	625,000			
Owyhee Gold		W. H. Smith, 43 Ex. Place	1,700,000			
Pahranagat Central	Nevada	J. E. Smith, 25 Pine	6,000,000			
Quartz Hill Gold		F. Bernard	2,500,000		20	30
Reese River Consol'd	Nevada	W. B. Ogden	6,000,000			
Rocky Mountain	Colorado	S. M. Pond, 70 B'way	500,000	10 00		
Rollins Gold		Thos. Bond, 132 B'way	600,000			
Sensenderfer	Colorado	H. A. Shewill, 19 Broad	1,000,000		1 00	
Silver Bend		F. W. Macy, 20 Nassau	1,500,000			
Silver Mt. Silver		H. A. Moen, 71 B'way	1,000,000			
Silver Peak & R. M	Nevada	W. B. Ogden, 52 Wall	5,000,000			
Smith & Parmelee	Colorado	W. H. Hollister, 6 Broad	2,500,000	20 00	1 00	
Social & Steptoe Con		T. H. O'Connor, 24 Nassau	450,000			
Standard Gold		C. B. Bostwick, 169 B'way	500,000			
Symonds Forks						75
Twin River Silver	Nevada	J. F. R. Hadden, 20 Nassau	800,000	100 00		
Texas Gold	Colorado		500,000	10 00		
Union Gold	Colorado	F. A. Potts, 110 B'way	1,200,000			
Wash. Mill & Silver	Nevada	W. W. Perkins, 71 B'way	300,000			
Wauba Yuma	Arizona	J. W. Silsby, 36 Pine	6,000,000			

COAL AND IRON COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
American Coal Co		M. A. Myers, 119 B'way	$1,500,000	$25 00		
Ashburton Coal Co		J. T. Rollins, 41 Pine	2,500,000			
Block House Coal		D. B. Keeler, Jr., 43 Pine	1,000,000			
Brewster Iron		H. Robison, 165 B'way	150,000			
Broad Top Coal & Iron Co	Pennsylvania	B. Love	2,000,000			
Cameron Coal Co		J. A. Simpson, 40 B'way	2,500,000			
Carbon Hill Coal Co		J. Silsby, 36 Pine	1,000,000			
Central Coal		F. P. White, 111 B'way	2,000,000	100 00		
Clifton Iron Co		P. H. Riordan, 34 Pine	1,250,000			
Columbia Iron		F. D. Webb, 77 Cedar	1,000,000			
Consolidation Coal	Maryland	J. S. Mackie, 71 B'way	5,000,000			
Crawford Coal		E. Clapp, Prest, 137 B'way	1,000,000			
Cumberland C. & I. Co		E. Kiscan, 90 B'way	5,000,000			45
Derby Coal Co		W. S. Davison, 11 Broad				
Dover Coal and Iron Co		L. Chase, 88 Wall				
Del. & Hudson Canal Co		R. H. Nodyne, 7 Nassau	15,000,000	100 00	100	
Ebervale Coal		G.L.Stout, Treas., 111 Br'y	500,000			
Fall River Bituminous		D. T. Blauvelt, 43 Pine	1,000,000			
Farrar Coal		C. H. Jones, 43 Pine	250,000			
Fisher Iron Co		M. Ellis, 19 William	100,000			
Hamp're & Balt. Coal		S. M. Pond, 70 B'way	500,000			
Iron Cliffs Co		C. J. Canda, 52 Wall	1,000,000			
Jackson Iron		G. P. Loyd, 119 B'way	300,000			
Kemble Coal & I. Co		R. A. Wight, 26 Ex. Place	300,000			
Keokuk Coal		J. F. Franklin, 112 B'way	100,000			
Lackawanna I. & C	Pennsylvania	E. C. Lynde, 52 Wall	1,200,000			
Lewis Run C. & I. Co		C. A. Sanborn, 80 B'way	750,000			
Lykens Val. Coal Co		F. A. Platt, 13 William	800,000			
McKean Co. Bit. Coal Co		J. H. Rolston, 80 B'way	1,500,000			
Lehigh & Susquehanna		E. W. Cark, Philadelphia, Pa.			1 00	
Mahanoy			400,000	100 00		
McNeal C. & I. Co		C. C. Godwin, 71 B'way	500,000			
Mount Riga Iron		G. M. Newton, 42 Cedar	300,000			
New Boston Coal		C. H. Ogden, 55 B'way	2,000,000			
N. Y. Con. C. & I. Co		A. T. Levine, 16 Wall				
N. Y. & Lehigh Coal		T. Simpson, 111 B'way	150,000			
Pacific Coal Co		G. Wrighton, 34 Wall				
Peekskill Iron Co		W. Murdock, 7 Nassau				
Pennsylvania Coal Co		E. H. Mead, 111 B'way	3,200,000	50 00		
Richmond Iron Co		[illegible] H. Smith, 165 B'way	1,000,000			
Scotia Coal Co		[illegible] S. Soper, 42 B'way	2,500,000			
Spring Mt. Coal		[illegible] Runyon, 111 B'way	1,250,000			
Springfield & D'p Run C.		E. D. Webb, 77 Cedar	600,000			
Stout Coal Co		G. S. Comstock, 111 B'way	500,000			
Susquehanna & Wyoming		E. Potter, 40 B'way	1,000,000			
Tannerdale Coal		I. T. Ludlaw, 71 B'way	250,000			
Wash. Mutual Coal		M. C. Baker, 117 B'way	420,000			
West Point Iron Co		R. C. Brock, 110 B'way	500,000			
Wilkesbarre C. & I. Co		W. H. Tillinghast, 80 Br'y	3,400,000			
Wyoming Val. Coal Co		E. Potter, 40 B'way	1,000,000			

COPPER AND LEAD COMPANIES.	SITUATION OF MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED
Anita Copper	California	J. A. Ferguson, 8 Wall				
Corinth Copper	Corinth, Vermont	S. H. Howard, 191 B'way	$500,000	25 00		
Davidson Copper						
Eagle Harbor Copper	Michigan	W. H. Smith, 43 Ex. Place	500,000	25 00		
Evergreen Bluff Copper	Michigan	F. W. Caper, 44 Ex. Place	500,000	25 00		
Globe Copper		R. K. Rickard, 19 Nassau	200,000			
Grand Portage Copper Co		A. S. Kellogg, 22 Pine	500,000			
Guymard Lead		Samuel Vernor, 38 Pine				
Hilton Copper		W. H. Smith, 43 Ex. Place	500,000			
Hope Copper		J. W. Davis, 19 Nassau	500,000			
Hudson River Copper	New York	T. Clarkson, 22 William	1,500,000			
Indiana Copper Co		J. M. Mills, 25 Nassau	500,000			
Isle Royale Copper	Michigan	F. W. Caper, 44 Ex. Place	1,000,000			
Keweenaw Copper	Michigan	F. W. Caper, 44 Ex. Place	500,000			
Lake Superi'r Silver Lead	Michigan	A. S. Kellogg, 22 Pine	1,000,000			
Omiga Copper	Michigan	S. Cooper, 7 Pine	500,000			
Ridge Copper	Michigan	J. L. Gardiner, Jr., 43 Ex. P.	500,000			
Rockland Copper	Michigan	A. Fullerton, 71 B'way	500,000			
St. Joseph Lead	Michigan	J. W. Jones, 6 Broad st,	1,000,000			
St. Marguret Copper		E. P. Sutton, 43 Pine	250,000			
Schoolcraft Copper		R. Walsh, 22 William	500,000			
Superior Copper	Michigan	A. Fullerton, 71 B'way	500,000			
Union Copper		A. S. Kellogg, 22 Pine	500,000			
Vermont Copper	Vermont	J. C. Ely, 191 B'way	500,000			
Wallkill Lead, asst		S. M. Pond, 70 B'way				

MISCELLANEOUS.	SITUATION MINE.	SECRETARY AND PLACE OF BUSINESS.	CAPITAL.	PAR VALUE.	OFF'R'D.	ASKED.
American Zinc Co		W. E. Lawton, 19 Cliff	$1,000,000			
Bigelow Blue Stone Co		H. Bogardus, 14 Pine				
Quicksilver						
Covill B. L. M. & M'f. Co		C. R. Bostwick, 302 Pearl	250,000			
Manhattan Marble		H. K. Gates, 70 B'way	300,000			
N. Jersey Zinc Co	New Jersey	A. H. Farlin, 61 Maiden L'e,	1,500,000			

MISCELLANEOUS.

EXECUTORS' SALE AT AUCTION,

By M. THOMAS & SONS, Philadelphia,

JUNE 14TH, AT 12 O'CLOCK M.

TO CAPITALISTS, TANNERS, COAL AND LUMBER DEALERS:

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GAS COAL, AND HEMLOCK TIMBER PROPERTIES

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On the line of the Philadelphia and Erie Railroad, which traverses the property, and at the terminus of the Buffalo and Washington Railroad, 110 miles from Buffalo, N. Y., and is also traversed by a branch of the Susquehannah River.

This property consists of about four thousand acres, and is underlaid with eighteen feet of superior, pure, workable, bituminous gas and steam Coal (veins five feet, four feet, and three feet in thickness, now open for inspection), and is covered with a valuable growth of Hemlock and other timber. There is also on the property superior Saw and Shingle Mills, with all appliances for manufacturing lumber, built within a year, costing upwards of thirty thousand dollars. This property is now offered, and must be sold without reserve to the highest bidder, at public auction, on Tuesday, June 14th next, at 12 o'clock M., by M. Thomas & Sons, at the "Philadelphia Exchange."

For pamphlets, maps, and further particulars apply to L. H. Simpson & Co., 42 Broadway, Room 41, New York City, or to M. Thomas & Sons, Auctioneers, No. 139 South Fourth street, Philadelphia. June 14:1t

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June 7:6m **North Chelmsford, Mass.**

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A. WEIDMANN & Co., 248 Grand street.

T. J. Scharfenberg. **J. N. Brewster.**
June 7:4t

NOTICE.

The DELERY GOLD MINING COMPANY, Proprietors of the Mining Rights in the Seigniory of Rigaud Vaudreuil in the county of Beauce, in the Province of Quebec, are prepared to issue free licenses to prospect and mine upon their property from the present date to the 1st of May, 1871. Particulars of conditions may be obtained at the Company's office, 46 St. Peter street, Quebec, or from W. P. LOCKWOOD, ESQ., at the Mines.

A. HECTOR, Secretary.
QUEBEC, June 2, 1870. June 14:2t

SAMUEL BONNELL, JR., OFFERS FOR SALE his SUGAR CREEK and HONEY BROOK

LEHIGH COALS,

OFFICE:
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SON'S PATENT PERFORATED CIRCULAR AND LONG SAWS,

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EMERSON'S PATENT ADJUSTABLE SWAGE,

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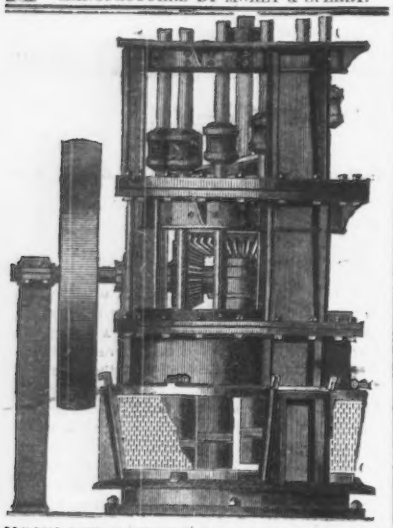

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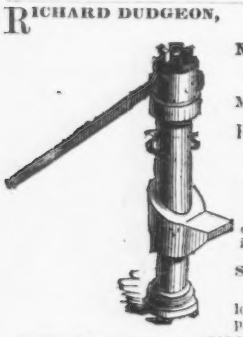

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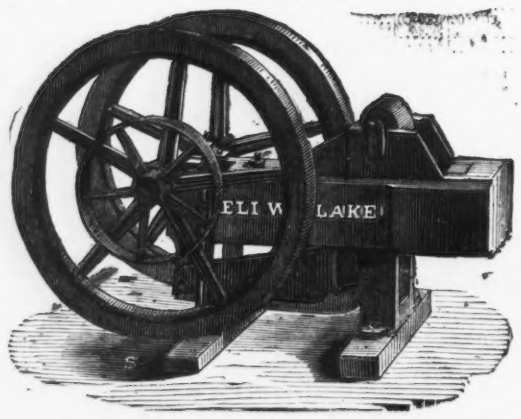

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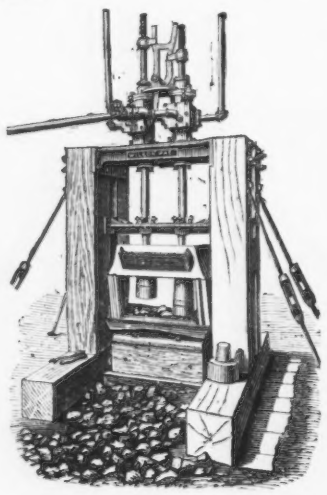

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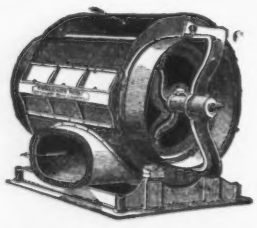

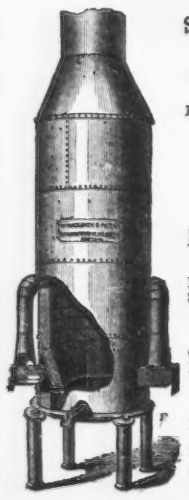

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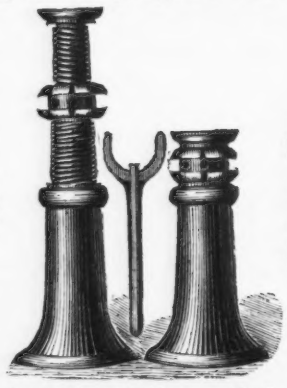

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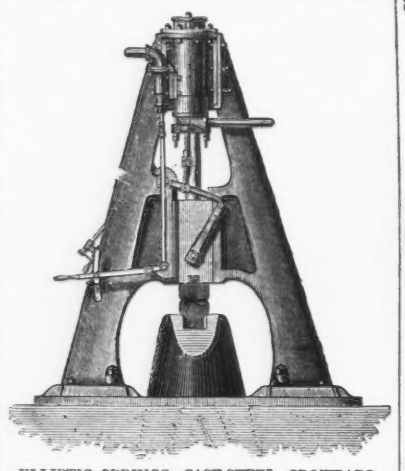

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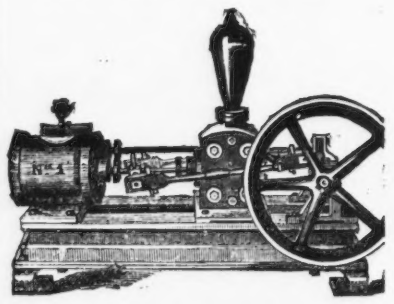

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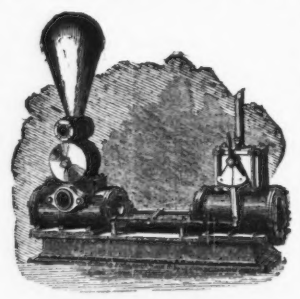

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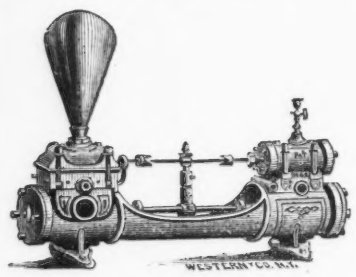

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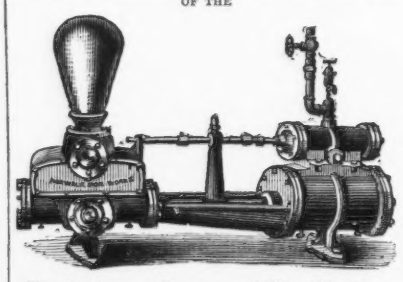

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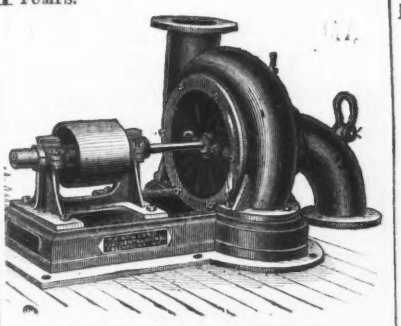

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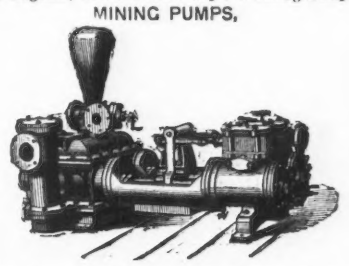

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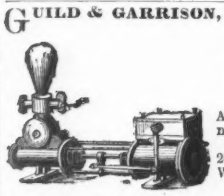

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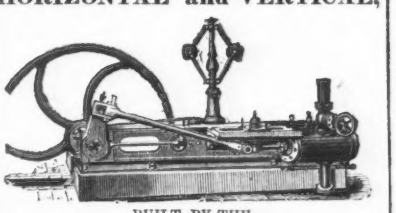

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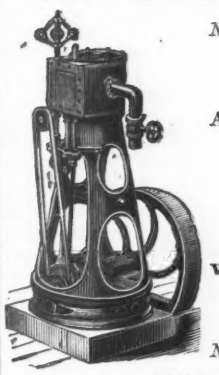

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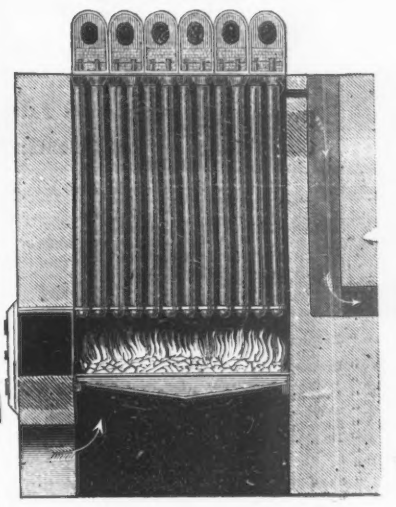

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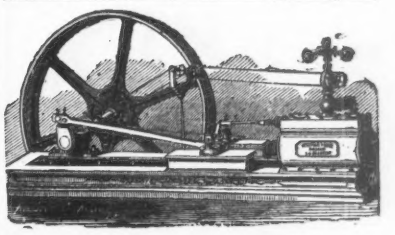

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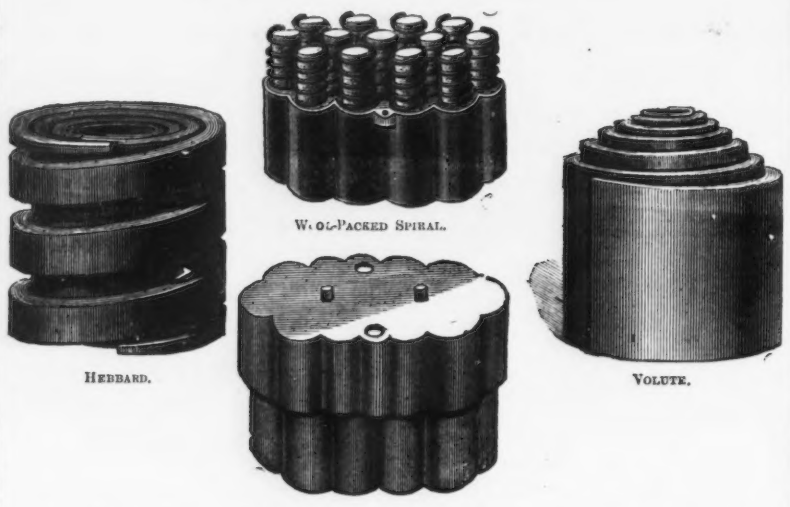

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